

REMARKS

This application pertains to a novel slag crusher comprising a pressure housing, a rotatable shaft extending through the pressure housing and including a plurality of cutting knives mounted thereon at a distance and rotating in operation, which cutting knives are mounted on the shaft so as to be angularly offset, comprising a plurality of stationary cutting knives disposed one beside the other below the shaft, where in the area of the crusher each rotating cutting knife extends between two adjacent stationary cutting knives. The pressure housing is flooded for water-cooling of the crushing part of the slag crusher. Inclined inlet baffle plates are disposed in the pressure housing, and form an inlet funnel directed towards the area of the crusher, and the knife is disposed at a distance (a) from the vertical center line of the pressure housing. Each stationary knife is formed with a long leg (7a) and a short leg (7b) between an arcuate recess, and the long leg is disposed in a slot of an inlet baffle plate.

Claim 1 is amended to substitute the expression --located between an arcuate recess-- for "between a curved portion" because it is obvious from figures 2 and 4 that the original language is incorrect and that the substituted language more accurately describes what is shown in the drawings.

Applicants gratefully acknowledge the Examiner's reminder about the recommended language and format for an abstract, and have provided a new abstract in accordance with those guidelines.

Claims 1-3 stand rejected under 35 U.S.C. 103(a) as obvious over the Japanese '685 publication in view of Fletcher and Ballu. The Examiner sees the Japanese publication as disclosing a basic apparatus for crushing slag matter including a pressure housing, a roll with cutting knives, inclined baffle plates, and stationary knives associated with one of the baffle plates. Although the Examiner sees the stationary knives of the Japanese publication as being horizontally oriented which may result in incomplete or inefficient cutting of the material, he views Ballu as solving this problem by disclosing similar apparatus which includes the use of curved stationary knives, specifically referring to element 15. The Examiner concludes that it would be obvious to modify the apparatus of the Japanese publication by using the curved stationary knives of the Ballu reference.

Further, the Examiner sees the roll of the Japanese publication as being located along the centerline of the housing, which limits the crushing area, but sees the Fletcher reference as solving this problem by using a roll with cutting knives wherein the roll is offset from the housing axis. The Examiner concludes that it would be obvious to modify the apparatus of the Japanese publication by incorporating the offset of Fletcher's roll.

Applicants respectfully point out that the Japanese publication discloses a slag crusher with a rotating shaft 33 disposed in the center of a slag cooling part 4 and comprises a straight fixed blade 14. This arrangement is inferior to that of the present application because it could lead to a hold-up of material to be crushed and additionally leads to a high degree of wear induced by an inefficient supply of material to the crushing points. Furthermore, the fixed blades 14 are only arranged to crush material and could not produce any cutting action. Thus, the crushing result is not as efficient as that of the slag crusher of the present application. The Japanese application therefore could not ever lead those skilled in the art to the present invention.

Fletcher (US 5,148,996) concerns an ice crushing apparatus where ice is crushed between rotatable blades 16 mounted on a shaft 30 and a grate 50. No cutting action occurs through this arrangement and the ice is crushed by pressing it through the grate 50. This arrangement is even worse than that of the Japanese publication with respect to slag crushing and is only good for crushing softer material such as ice. There is therefore no possibility that Fletcher, whether taken alone or in combination with the Japanese publication could ever lead to Applicants' novel slag crusher.

Ballu (US 5,454,522) concerns an apparatus for breaking solid objects between rotating blades 13 and backing knives 15. The backing knife 15 has a

concavity which is turned upward and toward the axis of the rotor shaft 6 and is arranged to pivot in order to create vibrations of the backing knives 15 for breaking the solid objects. This arrangement corresponds to a different approach for crushing objects than the present invention. In order to have a vibrating backing knife 15 a relatively complex arrangement is necessary whereby this arrangement, in particular that of the knives 15, is not as robust and provides no cutting action as compared to Applicants' apparatus, where the stationary cutting knives are rigidly connected by fastening means 9 to the mounting brackets 8 and 10 to provide a very robust arrangement, so that the Ballu apparatus is not very suitable for a slag crusher such as that of the present invention. No person skilled in the art, reading Ballu either alone or in combination with the Japanese publication and the Fletcher reference would ever be led to a slag crusher with a very simple, robust and efficient crushing part for crushing slag, such as Applicants'. Instead, the Ballu reference proposes an apparatus for another purpose with a complex and less robust construction that that of the present invention.

Accordingly, Applicants' claims cannot fairly be seen as obvious over the Japanese application, the Ballu reference and the Fletcher reference, whether taken individually or in any combination. The rejection of claims 1-3 under 35 U.S.C. 103(a) as obvious over the Japanese '685 publication in view of Fletcher and Ballu should therefore now be withdrawn.

In view of the present amendments and remarks it is believed that claims 1-3 are now in condition for allowance. Reconsideration of said claims by the Examiner is respectfully requested and the allowance thereof is courteously solicited.

CONDITIONAL PETITION FOR EXTENSION OF TIME

If any extension of time for this response is required, Applicants request that this be considered a petition therefor. Please charge the required petition fee to Deposit Account No. 14-1263.

ADDITIONAL FEE

Please charge any insufficiency of fee or credit any excess to Deposit Account No. 14-1263.

Respectfully submitted,
NORRIS, McLAUGHLIN & MARCUS, PA

By /William C. Gerstenzang/
William C. Gerstenzang
Reg. No. 27,552

WCG/tmh

875 Third Avenue - 18th Floor
New York, New York 10022
(212) 808-0700

I hereby certify that this correspondence is being transmitted via EFS-Web to the United States Patent and Trademark Office on June 25, 2007.

By /Jennifer Archer/
Jennifer Archer
Date June 25, 2007